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ABSTRACT

This two-part study was designed (1) to determine differences in the costs of searching BRS After Dark (BRS AD) and Knowledge Index (KI) generally and across ten selected databases, and (2) to determine whether there is a difference in the citations retrieved when the same search is conducted on the same database in both systems. Study methodology involved conducting a total of 40 searches on topics chosen from patron inquiries and currently popular research paper topics, including 4 searches conducted in each of 5 databases available on both BRS AD and KI. Databases searched included Agricola, CAB (Commonwealth Agricultural Bureau), Medlars, NTIS (National Technical Information Service), Inspec, Psycinfo, Legal Resource Index, ABI Inform, National Newspaper Index, and ERIC (Educational Resources Information Center). Study results indicate that KI was generally less expensive than BRS AD when an average of 50 to 60 citations were printed and for those databases in BRS AD which have citation charges of more than three cents. In addition, results for a search conducted in the same database in both BRS AD and KI were usually not identical, especially if truncation was used, with more citations generally being retrieved in KI. (KM)

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COST AND SEARCH RESULT COMPARISONS OF
BRS AFTER DARK AND KNOWLEDGE INDEX

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INTRODUCTION AND LITERATURE REVIEW

Two major end user systems, BRS After Dark (BRS AD) and Knowledge Index (KI), have been competing for the ever growing market of end users, including libraries. Although some general comparative studies have been done, no studies found compared costs, including BRS AD's new citation charges, and search results of the two. Many institutions and end users would like comparative data which would enable them to determine which system is generally less expensive and whether similar results are obtained when conducting a search on the same databases in each system. This study examined the cost and search result differences between the two systems.

The literature on the usefulness and increasing popularity of end user searching services abounds, with nearly everyone agreeing that do-it-yourself searching is established and is rapidly increasing. Many also concur in the opinion that libraries should help educate end users about searching (Falbisoff, Janke, Mader, Tenopir, etc.). The list of literature examined at the end of this paper is only a sample of that available. Some studies have reviewed either or both BRS AD or KI, giving their strengths and weaknesses.

Of the studies which compared the two, the primary advantages of BRS AD over KI mentioned consistently were BRS AD's lower cost and greater number of databases (Glossbrenner, Janke 1984, Ojala, Taylor, and

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Tenopir 1983, 1986). In some cases (except Taylor; and Kesselman May 1984, who thought BRS AD allowed better strategy), the primary advantages of KI mentioned were that it was either easier to use or allowed for better refinement of search strategy than BRS AD (Lisanti, Janke 1983, Tenopir 1983). However, the pre 1984 BRS AD manual did not mention the fact that the user could qualify by title, descriptors, year, major vs. minor descriptors, etc., even though this could be done. Some, especially Carol Tenopir, stressed the need for more research to determine the preferred system. That was one of the purposes of this study.

OBJECTIVES

The major objective of the study was to determine differences in the costs of searching BRS AD and KI generally, and across the ten databases selected. A secondary objective was to determine whether there is a difference in the citations retrieved when the same search is conducted on the same database in both BRS After Dark and Knowledge Index.

METHODOLOGY

Topics for the two searches in each of ten popular databases available on both BRS AD and KI were chosen from patrons inquiring about end user services and planning to conduct searches on one of the selected databases. Some topics were also chosen from the current semester's research paper "hot topics". Attempts were made to choose topics which would yield enough citations to be typical of end user searches. The average number of citations printed per search for the previous year at the Sterling C. Evans Library had been 59. Thus, if

any search yielded fewer than 20 items, either the strategy was broadened to yield more items or it was counted as a practice search. Most of the searches were conducted in less than 20 minutes, the amount of time allowed to end users at the Evans Library.

Although patrons submitting topics could pick up the printout after the search and judge the relevancy of citations, they were not allowed to conduct their own searches nor be present during the search. This was one way of assuring that searching experience would be consistent. Also, scheduling and limited time was a factor in this decision.

Over a period of about three weeks in November and December 1986, all 40 searches were conducted. We each conducted two searches in each of five databases available in both BRS AD and KI. The two systems had 15 non full text databases in common, and the ten most frequently used at the Evans Library were chosen: Agricola, CAB, Medlars, NTIS, Inspec, PsycInfo, Legal Resource Index, ABI Inform, National Newspaper Index, and ERIC. Full text databases were excluded because they are not as popular and to ensure more uniformity in display formats and in searching techniques and experience.

We conducted some practice searches in each system to assure uniform competency on the two systems. When searches were conducted, we alternated the system first searched for each database. For example, the first topic in a given database was conducted first in BRS AD and then KI; the next topic was conducted first in KI, then BRS AD. It was assumed that usually the first time a given topic was searched, it would take more time to determine exact search strategy than a second search of the same topic. The final strategy used in the first system was written down in the protocol of the second system before the

second search was done.

We attempted to duplicate strategy as closely as possible when conducting the same search in both systems, although we did not attempt to exclude truncation because of differences in the two systems since truncation is one of the techniques most often used by end users. However, if an approximate equivalent searching technique was not available in both systems, it was not used in either. For example, limiting by year or using SAME or WITH instead of AND was not available in KI, so it was not used in BRS AD either. Citations were printed in equivalent formats--usually the bibliographic citation--in both systems. After conducting a search using each of the two systems, the searches were carefully examined by at least three people to see if there were differences in strategy, misspellings, or other inconsistencies. If differences were found, another search was conducted.

RESULTS

Costs

The figures on page 5 show combined averages for all ten databases on each system. Figures 1-3 show that KI was generally less expensive than BRS AD when an average of 50 to 60 citations were printed. The three cost factors examined included: 1. total cost per search 2. total cost per minute, and 3. total cost per citation. The total cost included both connect time and citation charges. The average cost per search was about 50 cents more in BRS AD; the cost per minute 15 cents more, and the cost per citation almost 3 cents more than in KI. However, searches in BRS After Dark produced more extreme ranges of all cost factors, so averages across all databases do not tell the whole

FIG. 1 Average Cost/ Search

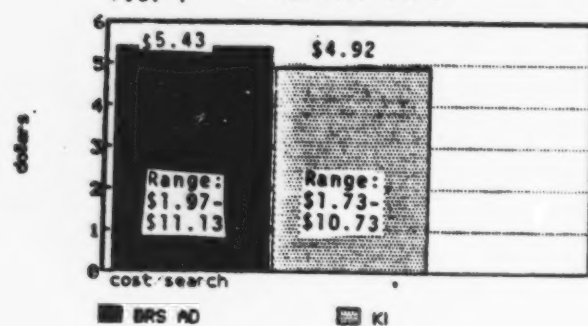


FIG. 2 Average Cost/Minute

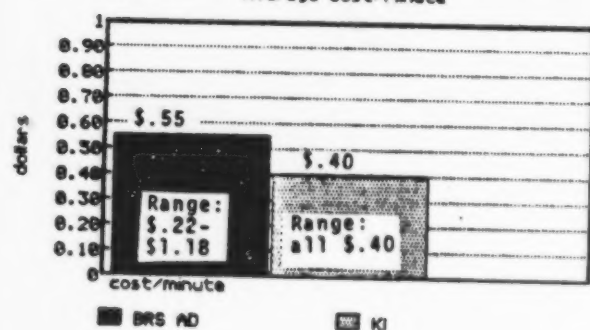


FIG. 3 Average Cost/ Citation

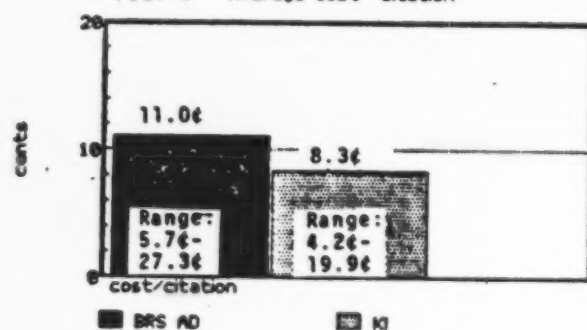


FIG. 4 Average No. Citations/Search

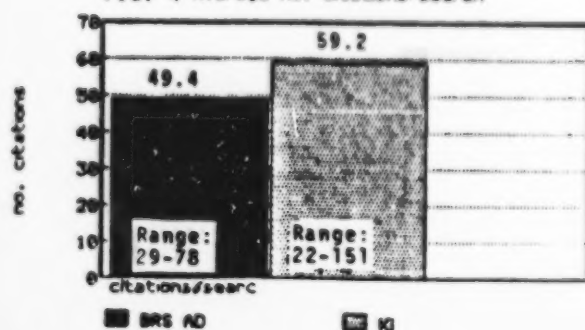


FIG. 5 Average No. Unique Citations/ Search

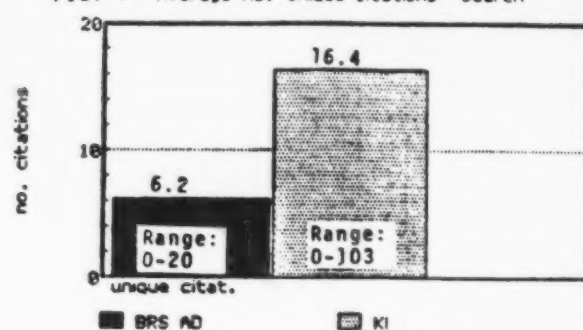


FIG. 6 Average Minutes/ Search

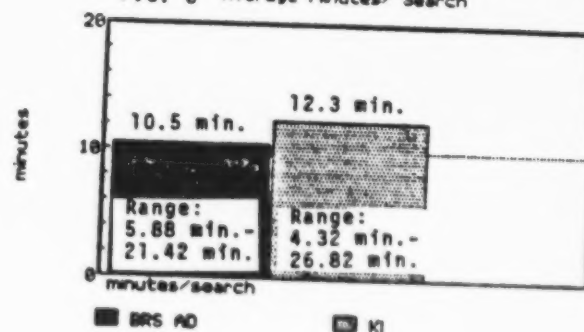


FIG. 7 Average Minutes/ Citation

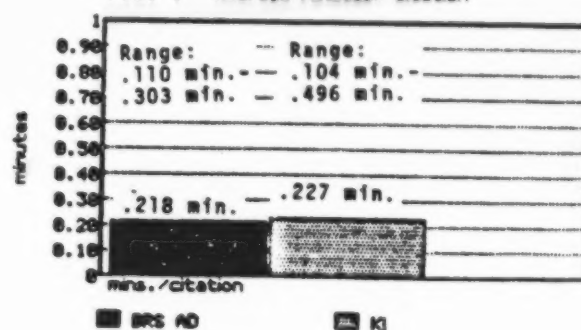


FIG. 8 Average Percent Ranges Relevant Citation

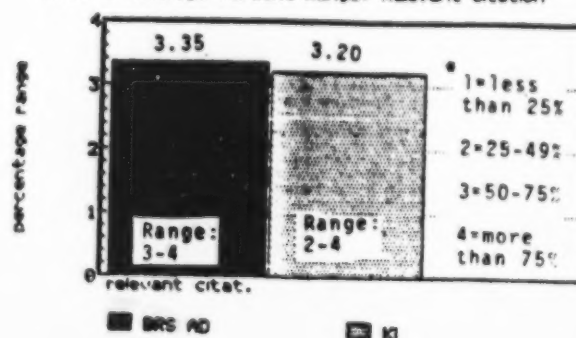


TABLE 1

DATABASE	Average Total Cost/Search		Average Total Cost/Minute		Average Total Cost/Citation		Average Citations/Search		Average No. Unique Citations/search		Average percent range* of relevant citations/search		Average minutes/search		Average minutes/citation	
	BRS AD	KI	BRS AD	KI	BRS AD	KI	BRS AD	KI	BRS AD	KI	BRS AD	KI	BRS AD	KI	BRS AD	KI
1. ABI Inform	\$3.26	\$2.57	\$4.15	\$4.40	\$0.076	\$0.059	43.0	43.5	.5	1.0	3.5	3.5	7.9	6.4	.182	.148
2. ERIC	\$3.14	\$4.72	\$2.18	\$4.40	\$0.057	\$0.088	55.0	53.5	6.0	4.5	3.0	3.0	14.4	11.8	.262	.221
3. Legal Resource Index	\$7.66	\$4.21	\$9.82	\$4.40	\$0.152	\$0.046	58.5	92.0	18.5	52.0	4.0	4.0	7.8	10.5	.154	.114
4. Psych-info	\$2.67	\$3.57	\$4.36	\$4.40	\$0.066	\$0.063	48.5	57.0	7.0	23.5	3.5	3.0	6.1	8.9	.151	.157
5. National Newspaper Index	\$9.88	\$3.16	\$1.18	\$4.40	\$0.129	\$0.042	76.5	76.0	6.5	7.0	4.0	4.0	8.4	7.9	.110	.104
6. NTIS	\$3.11	\$5.76	\$2.56	\$4.40	\$0.063	\$0.109	49.5	53.0	8.0	3.5	3.0	3.0	12.2	14.4	.246	.272
7. CAB	\$18.39	\$6.75	\$9.02	\$4.40	\$0.273	\$0.199	38.0	34.0	13.0	10.0	3.0	3.0	11.5	16.9	.303	.496
8. INSPEC	\$4.59	\$6.19	\$3.61	\$4.40	\$0.098	\$0.103	47.0	60.0	3.5	18.0	3.5	3.0	12.7	15.5	.271	.258
9. Agricola	\$2.98	\$5.76	\$2.95	\$4.40	\$0.069	\$0.090	42.0	63.5	13.0	34.5	3.0	3.0	9.8	14.4	.234	.227
10. Medlars	\$6.73	\$6.51	\$4.77	\$4.40	\$0.129	\$0.109	52.0	59.5	2.0	9.5	3.0	2.5	14.1	16.3	.271	.273

*
 1= less than 25%
 2= 49-25%
 3= 75-50%
 4= more than 75%

story.

Table 1 on page 6 shows data for each individual database. All three cost factors were lower in BRS AD than KI for four out of the 10 databases--ERIC, NTIS, Agricola, and Inspec. Each of these four databases had low per hour connect charges in BRS AD and charges of only 3 cents per citation. Since we conducted this study, however, Inspec has raised their citation charge to 6 cents, so is no longer less expensive in BRS AD. Cost differences most drastic in KI's favor appeared in those databases where BRS AD's citation charges were more than three cents and per hour connect charges above \$15. National Newspaper Index, Legal Resource Index, and CAB fall into this category. Three other databases--ABI Inform, Psycinfo, and Medlars--were also less expensive in KI, but the differences were less drastic.

Search Results

In most cases there was some difference in citations retrieved when conducting similar searches in both systems. However, the difference was dramatic in only a few cases. Figure 4 indicates that the average number of citations per search was about 50 in BRS AD and almost 60 in KI; figure 5 shows that the average number of unique citations found per search in KI was more than double those found in BRS AD, and the range was also greater in KI.

Several explanations for these differences in the citations retrieved from the two systems are possible. Truncation differences probably account for the greater number of citations most of the time in KI. As end users are advised to do, we used a number after the \$ in BRS AD (for example computer\$4 instead of computer\$). Otherwise the system may overflow or stop searching before all terms of interest have

been searched. In KI, there is no way to specify a maximum number of characters after the truncation, so just a ? was used in most cases, and sometimes the system overflowed or dropped us. In some cases most of the words of interest were used without truncation. A long list of words was cumbersome in KI, especially since one could not yet qualify to titles, descriptors, etc., without retyping the whole list of terms instead of just using set numbers.

Citation retrieval differences in some cases may also be explained by variations in years of coverage of databases in KI and BRS AD. Where possible, databases were chosen which closely corresponded to each other in the two systems, but some differences were unavoidable. For example, CAB covers 1980 to the present in BRS AD, and is split into two different databases in KI, one covering 1984 to the present, and the other 1972-1983. Other databases covering different years in the two systems are: Psycinfo covering 1967- in BRS AD and 1974- in KI, current Medlars covering 1981- in BRS AD and 1980- in KI, and Agricola covering 1970- in BRS AD and 1979- in KI. Although both Psycinfo and Agricola cover more years in BRS AD, searches in these databases produced more citations in KI. In the case of Agricola, truncation cannot account for this difference, as one of the searches used no truncation.

Differences in update times may also account for some of the unique citations. In several searches a few more current citations occurred in one system than the other. Possible differences in loading and fields in the two systems may provide yet another explanation for citation differences. For example, if one system includes enrichment words in the title, and the other does not, any sets limited to title,

would retrieve more citations from the system with enriched titles. Loading or field differences may explain why more citations were retrieved in Agricola via KI than BRS AD even though no truncation was used and BRS AD covers more years.

Apart from cost and citations, other differences were observed in the two systems. On the average a search conducted in KI took about two minutes longer than the same search in BRS AD (figure 6). This phenomenon probably occurred because BRS AD users could qualify to titles, descriptors, and so on by using set numbers, but at the time of our research, terms qualified in KI had to be retyped. The fact that more citations were retrieved in KI in most cases could also account for part of the extra time since extra citations add to printing time. The average connect time per citation retrieved was only slightly more in KI (figure 7). The average percent of relevant citations retrieved was slightly lower in KI than BRS AD (figure 8), but was the same in both systems for most searches.

SUMMARY OF ADVANTAGES OF BRS AFTER DARK OVER KI

Although BRS AD may no longer always be the least expensive system, it has other advantages. KI has no equivalent to BRS AD's use of SAME or WITH instead of AND to narrow the search. In BRS AD, the user does not have to retype terms connected by OR in order to qualify them, but may do so by using set numbers. At the time we conducted our searches, KI did not have this capability. Also, qualification by years, language, and major vs minor descriptors is available in some databases in BRS AD, but not generally in KI.

Approximately 100 databases are available in BRS AD and only about 50 in KI. The ability to limit the number of characters after

truncation in BRS AD makes it less likely that a search will be dropped because of an overflow. In KI, if a truncated word or even a non-truncated word with a very large number of postings is used, the system may indicate an overflow or drop the user. In addition, BRS AD does not require typing commands before each set is created or combined.

SUMMARY OF ADVANTAGES OF KNOWLEDGE INDEX OVER BRS AD

In addition to generally lower cost for most databases, KI has other advantages. Keeping track of costs is simpler in KI than in BRS AD. Not only is the connect cost per hour the same for every database with no additional charge for citations, but also, at the end of the search, the system tells the user exactly how much has been spent. In BRS AD, keeping track of separate, changing, online and citation charges for a hundred different databases as well as citation counting makes determining the exact cost difficult until the bill comes. Further, unlike BRS AD, KI lists the number of postings for each term in a set, which can be very useful in search strategy modification, and also lets users know that their inquiry is being processed.

KI allows printing in a format shorter than the bibliographic citation for viewing samples. For most databases short format in BRS AD is the same as medium format in KI. Also, even though KI may sometimes drop users, the system remembers the search, so reconstruction of the whole search is unnecessary if the user logs back on within ten minutes. If users are dropped in BRS AD, they must retype the entire search. Although KI includes fewer databases than BRS AD, it covers some important databases which are not covered by BRS AD such as Engineering Index and the recently-added MLA Bibliography. Other changes in KI since this study also allow qualification using set

numbers and qualification by year and/ or language in some databases.

REVIEW AND CONCLUSIONS

Generally, Knowledge Index is less expensive to use than BRS After Dark for most databases when an average of 50 to 60 citations are printed. It is particularly less expensive for those databases in BRS AD which have citation charges of more than three cents. For those databases where the connect cost per hour is less than \$15, and citation charges are only three cents, however, BRS AD may still be the less expensive choice. General advice may not be the best advice for every search, nevertheless, this study has shown that since BRS AD has instituted charges for citations in every database, and has a high citation charge in some, it is no longer necessarily the least expensive as past studies have indicated.

When a search is conducted in the same database in both BRS AD and KI, the results are usually not exactly the same, especially if truncation is used. Although the number of citations unique to either BRS AD or KI was drastic in only a few cases, these differences were greater than expected. Truncation differences, and differences in years of coverage can probably explain why there were more citations retrieved in KI most of the time, although sometimes no definite explanation could be found. Other possible explanations have been mentioned.

While this project does not provide a comprehensive analysis of which system is best, it may have shed some light on the advantages and disadvantages of the two systems. As already indicated, in the few months since conducting this study, KI now has new qualification capabilities and databases, and BRS AD has raised the citation charge

In Inspec. Obviously, change on end user systems is rapid. In this field, librarians must continue to use all their research skills to provide excellent advice for users on selection of vendors and databases.

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